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| 09/482,060      | 01/13/00    | WIECZOREK            | D 051252-5029       |

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QM02/1002

EXAMINER

KIM, C

ART UNIT

PAPER NUMBER

3752

DATE MAILED: 10/02/00

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trademarks**

# Office Action Summary

Application No.  
09/482,060

Applicant  
Wleczorek et al.

Examiner  
Christopher S. Kim

Group Art Unit  
3752



☒ Responsive to communication(s) filed on 13 Jan 2000

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 35 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

## Disposition of Claim

☒ Claim(s) 1-23 is/are pending in the application

Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration

☐ Claim(s) \_\_\_\_\_ is/are allowed.

☒ Claim(s) 1-12 and 16-23 is/are rejected.

☒ Claim(s) 13-15 is/are objected to.

☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.

## Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☒ The drawing(s) filed on 13 Jan 2000 is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some\* ☒ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_

☒ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 2

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

— SEE OFFICE ACTION ON THE FOLLOWING PAGES —

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## **DETAILED ACTION**

### ***Drawings***

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: "12" in figure 1.

Correction is required.

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: "110" on page 7, line 13; and "99" on page 7, line 27. Correction is required.

### ***Specification***

3. The disclosure is objected to because of the following informalities: on page 7, line 7, "Fig. 1" should read --Figs. 2A and 3A--; on page 7, line 10, "2A and 3A" should read --2B and 3B--; on page 8, line 14, "Fig. 3" should read --Fig. 3B--.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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5. Claims 3-5 and 21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 3 recites the limitation "the first portion" in line 4. There is insufficient antecedent basis for this limitation in the claim.

6. Claim 21 recites the limitation "the average cross-sectional area of the body passage" in line 1. There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1-9 and 16-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wieczorek in view of Daly et al.

With respect to claims 1, 3-9, and 16-18, Wieczorek discloses a fuel injector (also see Hensley, US Patent 4,610,080 per Wieczorek column 1, lines 61-62) comprising: a body 24 (4,610,080); an armature 26 (4,610,080); a cylindrical needle 12; a seat 14; a first surface 22, a second surface (external bottom of seat member 14), and a cut-out configuration 34. Wieczorek discloses a guide member 26 but does not disclose a swirl generator. Daly et al. disclose a swirl

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generator 18 which also functions as a guide member. It would have been obvious to a person having ordinary skill in the art at the time of the invention to have replaced the guide member of Wieczorek with the swirl generator/guide member of Daly et al. to increase the divergence of the column of fuel.

With respect to claims 20 and 23, the limitations of the method of stabilizing temperature of a fuel injector are inherently met by operating the device of Wieczorek in view of Daly et al.

With respect to claims 2, 19, and 22, Wieczorek in view of Daly et al. disclose the limitations of the claimed invention with the exception of the range of the inner and outer diameter of the cylindrical annulus. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have made the inner diameter of the cylindrical annulus no more than 50% greater than the diameter of the cylindrical needle and the outer diameter of the cylindrical annulus no less than 100% greater than the inner diameter of the cylindrical annulus, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. 8 *In re Aller*, 105 USPQ 233.

With respect to claim 21, Wieczorek in view of Daly et al. disclose the limitations of the claimed invention with the exception of the body passage cross sectional area being less than 2.25 times the needle cross sectional area. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have made the body passage cross sectional area less than 2.25 times the needle cross sectional area, since it has been held that where the

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general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. 8 *In re Aller*, 105 USPQ 233.

9. Claims 6-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wieczorek in view of Horsting.

Wieczorek discloses a fuel injector (also see Hensley, US Patent 4,610,080 per Wieczorek column 1, lines 61-62) comprising: a body 24 (4,610,080); an armature 26 (4,610,080); a cylindrical needle 12; a seat 14; a first surface 22, a second surface (external bottom of seat member 14), and a cut-out configuration 34. Wieczorek discloses a guide member 26 but does not disclose a swirl generator. Horsting discloses a swirl generator 30, 32 having slots 35 which also functions as a guide member. It would have been obvious to a person having ordinary skill in the art at the time of the invention to have replaced the guide member of Wieczorek with the swirl generator/guide member of Horsting to increase the divergence of the column of fuel.

10. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wieczorek in view of Horsting as applied to claim 11 above, and further in view of Renowden et al.

Wieczorek in view of Horsting disclose the limitations of the claimed invention with the exception of the plurality of volumes. Renowden et al. disclose a plurality of volumes in seat 20. It appears, lacking any criticality, a plurality of volumes (subdividing the volume) is a mere design choice. It would have been obvious to a person having ordinary skill in the art at the time of the invention to have made the single volume of Wieczorek in view of Horsting into a plurality of volumes to increase the structural strength.

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*Allowable Subject Matter*

11. Claims 13-15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

*Conclusion*

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Tanasawa et al. disclose a volume in the valve seat. Gaupp and Pielstick disclose cooled injectors.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher S. Kim whose telephone number is (703) 308-8336. The examiner can normally be reached on Monday-Thursday from 6:30 a.m. to 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andres Kashnikow, can be reached on (703) 308-1137. The fax phone number for this Group is (703) 305-3588.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-1113.

CK

September 27, 2000

  
ANDRES KASHNIKOW  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 3700

9/28/00